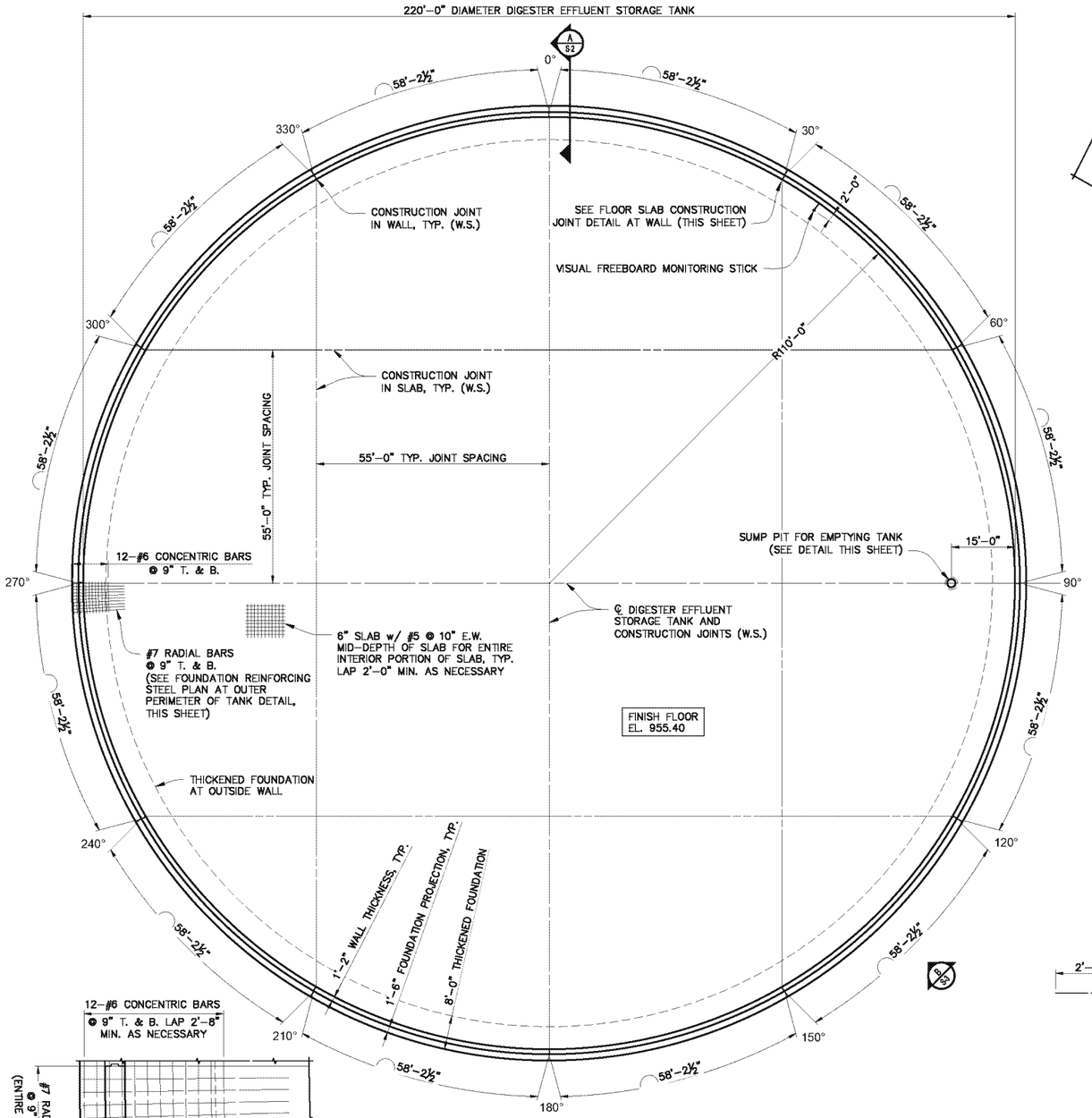
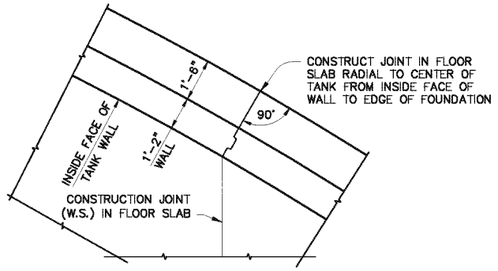
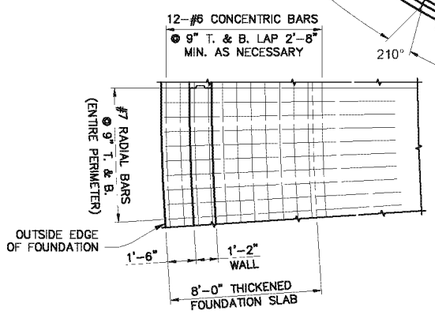




FLOOR SLAB CONSTRUCTION JOINT DETAIL AT WALL

0 1 2 3 4
Scale In Feet



FOUNDATION REINFORCING STEEL PLAN AT OUTER PERIMETER OF TANK

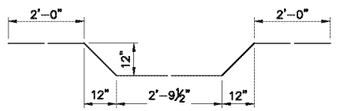
0 1 2 3 4
Scale In Feet

5.4 MILLION GALLON DIGESTER EFFLUENT STORAGE TANK PLAN

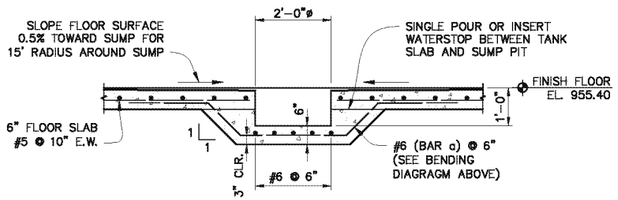
0 4 8 16 32
Scale In Feet

TANK DESIGN LOADS (ASCE 7)

TANK WALL DEAD LOAD:	2,428,400 LBS
TANK FOUNDATION SLAB DEAD LOAD:	3,908,300 LBS
FLUID WEIGHT:	46,946,400 LBS
TANK FLOOR PRESSURE FROM FLUID:	1,235 PSF
TANK FOUNDATION BEARING PRESSURE:	1,310 PSF (@ MIDDLE OF TANK)
	1,763 PSF (@ OUTER WALL)
WIND SHEAR:	27,385 LBS
WIND OVERTURNING MOMENT:	191,695 LB-FT
SEISMIC BASE SHEAR:	965,072 LBS
SEISMIC OVERTURNING MOMENT:	63,881,299 LB-FT



BAR a



SUMP PIT DETAIL

0 1 2 3 4
Scale In Feet

AS-BUILT
JULY 2018

REVISED 7/13/18
REVISED 2/18/14

STRUCTURAL NOTES

S-1

DESIGN SPECIFICATIONS
STRUCTURAL CONCRETE DESIGN CONFORMS TO THE MOST RECENT EDITIONS OF ACI PUBLICATIONS 318 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" AND 350 "CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES".

DESIGN STRENGTHS
CONCRETE f_c' = 4,000 PSI (28 DAY COMPRESSIVE STRENGTH)

REINFORCING STEEL f_y = 60,000 PSI
A615 OR A996 GRADE 60 BARS

DESIGN LOADING
DIGESTER EFFLUENT LOADING (INSIDE): 65 PSF/FT
ALLOWABLE FOUNDATION BEARING CAPACITY: 3,000 PSF

CONCRETE CONSTRUCTION
ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE IN ACCORDANCE WITH ACI 301 AND 318 REQUIREMENTS. IN ADDITION TO ACI 301 AND 318, APPLICABLE DESIGN MIX AND PROPORTIONING REQUIREMENTS OF ODOT (OHIO DEPARTMENT OF TRANSPORATION) CONSTRUCTION AND MATERIAL SPECIFICATION FOR CONCRETE CLASS QC1 CONTAINED IN 499 AND 511 SHALL APPLY.

ALL CONCRETE SURFACES EXPOSED TO AIR, UNLESS OTHERWISE NOTED IN SPECIFICATIONS, SHALL BE TREATED WITH AN APPROPRIATE CURING COMPOUND AS SOON AS CONCRETE FINISHING IS COMPLETED OR FORMS ARE REMOVED.

OUTSIDE CORNERS OF EXPOSED CONCRETE SHALL BE FINISHED WITH A 3/4" CHAMFER.

CONCRETE DELIVERED TO THE SITE SHOULD MEET TEMPERATURE REQUIREMENTS OF ASTM C94. CONCRETE SHOULD NOT BE PLACED UPON FROZEN SOILS OR SOILS WHICH CONTAIN FROZEN MATERIAL. CONCRETE SHOULD BE PROTECTED FROM FREEZING UNTIL THE NECESSARY STRENGTH IS ACHIEVED. FROST SHOULD NOT BE PERMITTED TO PENETRATE BELOW FOOTINGS BEARING ON FROST SUSCEPTIBLE SOIL SINCE SUCH FREEZING COULD HEAVE AND CRACK THE FOOTINGS.

UNLESS NOTED OTHERWISE ON THE DRAWINGS, REINFORCING STEEL SPLICE LENGTHS SHALL BE AS FOLLOWS:

#5 BARS: 2'-0"
#6 BARS: 2'-8"
#7 BARS: 3'-5"
#8 BARS: 4'-0"

CONSTRUCTION JOINTS
JOINT LOCATIONS SHALL BE AS SHOWN IN THE PLANS. NO HORIZONTAL JOINTS SHALL BE PERMITTED IN THE SLAB. APPROVAL OF THE ENGINEER MUST BE OBTAINED PRIOR TO ADDING ANY JOINTS NOT SHOWN IN THE PLANS.

CONCRETE POURS IN THE FOUNDATION SLAB AND WALLS SEPARATED BY CONSTRUCTION JOINTS SHOWN ON THE DRAWINGS SHALL BE ALTERNATELY PLACED SUCH THAT A MINIMUM OF 48 HOURS HAS PASSED FROM THE TIME OF THE FIRST POUR UNTIL THE TIME OF THE PLACEMENT OF THE ADJACENT SECOND POUR. THE PURPOSE OF THIS PLACEMENT RESTRICTION IS TO ALLOW SHRINKAGE THAT IS TYPICALLY PRESENT DURING THE INITIAL CURING PROCESS TO OCCUR BEFORE THE ADJACENT POUR IS PLACED, AND THEREBY REDUCING STRESSES IN THE WALL CAUSED BY SHRINKAGE FORCES.

PROVIDE A ROUGHENED SURFACE AT CONSTRUCTION JOINT LOCATIONS BY EITHER ROUGHENING THE SURFACE IMMEDIATELY AFTER THE CONCRETE IS PLACED OR BY SANDBLASTING OR AIR-WATER CUTTING AFTER THE CONCRETE HAS HARDENED.

WHERE REQUIRED, HOT APPLIED JOINT SEALER SHALL MEET THE REQUIREMENTS OF ASTM D 6690, TYPE II.

WHERE REQUIRED, COLD APPLIED JOINT SEALER SHALL BE COMPOSED OF A HOMOGENEOUS BLEND OF ASPHALT, RUBBER, INERT FILLER AND A SUITABLE SOLVENT OR SOLVENTS. THE MATERIAL SHALL BE CAPABLE OF BEING INSTALLED BY A HEAVY DUTY AIR OPERATED PUMP OR OTHER DEVICE CAPABLE OF CONTINUOUSLY FEEDING THE COMPOUND UNDER PRESSURE.

GEOTECHNICAL REPORT
GEOTECHNICAL REPORT PREPARED BY PROFESSIONAL SERVICE INDUSTRIES, INC. DATED 4-24-2013. INTERPRETATION OF THE CONTENTS OF THE REPORT IS THE CONTRACTOR'S RESPONSIBILITY.

REMOVE ALL TOPSOIL AND ROOT ZONE FROM THE TANK AREA. EXCAVATE TO THE DEPTH SHOWN ON THE SITE PLAN BASED ON RECOMMENDATIONS IN THE GEOTECHNICAL REPORT. IT IS RECOMMENDED THAT THE SUBGRADE BE EVALUATED BY A GEOTECHNICAL ENGINEER TO ASSESS THE SUITABILITY OF THE SOIL LEFT IN PLACE PRIOR TO CONSTRUCTION OF THE TANK FOUNDATION. THE GEOTECHNICAL ENGINEER SHALL PERFORM TESTING TO VERIFY THAT THE ASSUMED ALLOWABLE BEARING CAPACITY LISTED UNDER "DESIGN LOADING" ABOVE IS VALID.

BACKFILL OR FILL SHALL BE PLACED IN LIFTS AND COMPACTED IN ACCORDANCE WITH THE RECOMMENDATIONS CONTAINED IN THE GEOTECHNICAL REPORT.

A SAND OR FINE STONE CUSHION AT LEAST 3" IN THICKNESS SHALL BE PLACED UNDER THE TANK FOUNDATION SLAB PRIOR TO CONSTRUCTION OF THE TANK FOUNDATION.

STATE OF OHIO
BENJAMIN D. HOOTMAN
E-67464
REGISTERED PROFESSIONAL ENGINEER

BENJAMIN D. HOOTMAN
2-14-2014
DATE

AS-BUILT (JULY 2018)

ENGINEERING ASSOCIATES
1935 Eagle Pass
Wooster, Ohio 44691
Phone : (330) 345-6556
Fax : (330) 345-8077

DESIGNED	BDH
DRAWN	BDH
REVIEWED	REP
DATE	2/14/14

QUASAR ENERGY GROUP
DIGESTER EFFLUENT STORAGE TANK
1156 HERR RD., FAIRBORN, OH FACILITY

STRUCTURAL
STORAGE TANK PLAN AND SECTION

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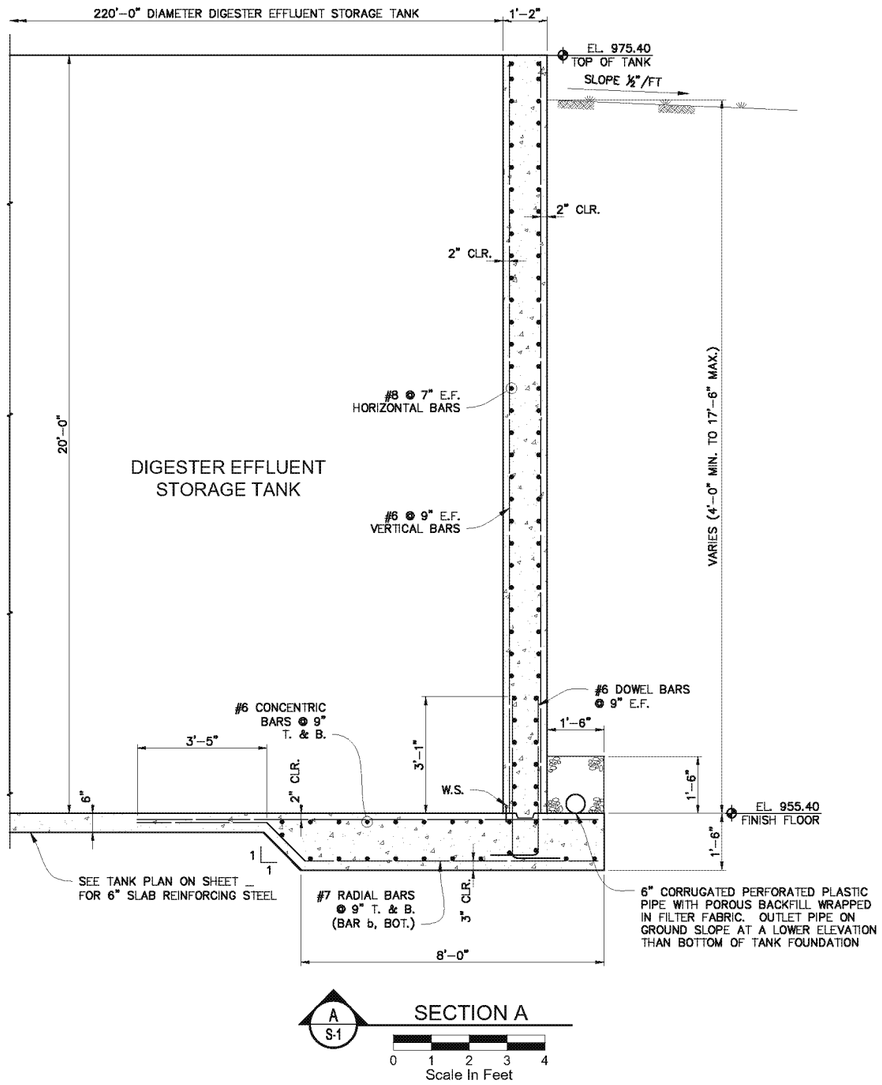
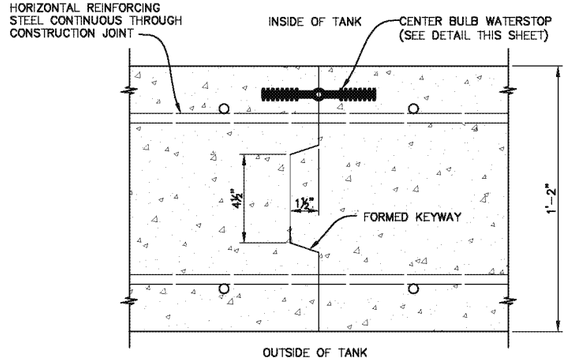


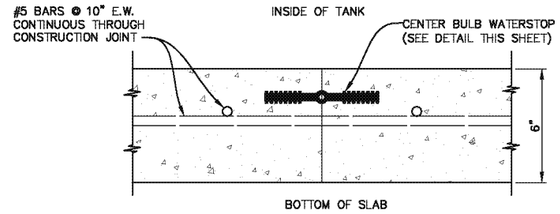
A
S-1

SECTION A

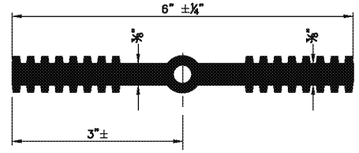
0 1 2 3 4
Scale In Feet



CONSTRUCTION JOINT DETAIL
(WALL)
N.T.S.

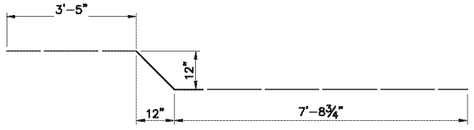


CONSTRUCTION JOINT DETAIL
(FLOOR SLAB)
N.T.S.



WATERSTOP FOR CONSTRUCTION JOINTS SHALL BE PVC SERRATED TYPE WITH CENTER BULB, NOT LESS THAN 6" IN WIDTH AND 3/8" THICK.

TYPICAL CENTER BULB WATERSTOP
N.T.S.



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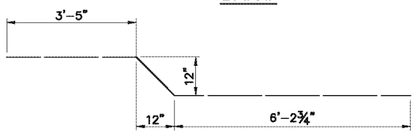

BAR c

REVISED 7/13/18
REVISED 4/25/14
REVISED 2/25/14
REVISED 2/18/14

STATE OF OHIO
BENJAMIN D. HOOTMAN
E-67464
REGISTERED
PROFESSIONAL ENGINEER

BENJAMIN D. HOOTMAN
2.14.2014
DATE

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QUASAR ENERGY GROUP
DIGESTER EFFLUENT STORAGE TANK
1156 HERR RD., FAIRBORN, OH FACILITY

STRUCTURAL
TANK DETAILS

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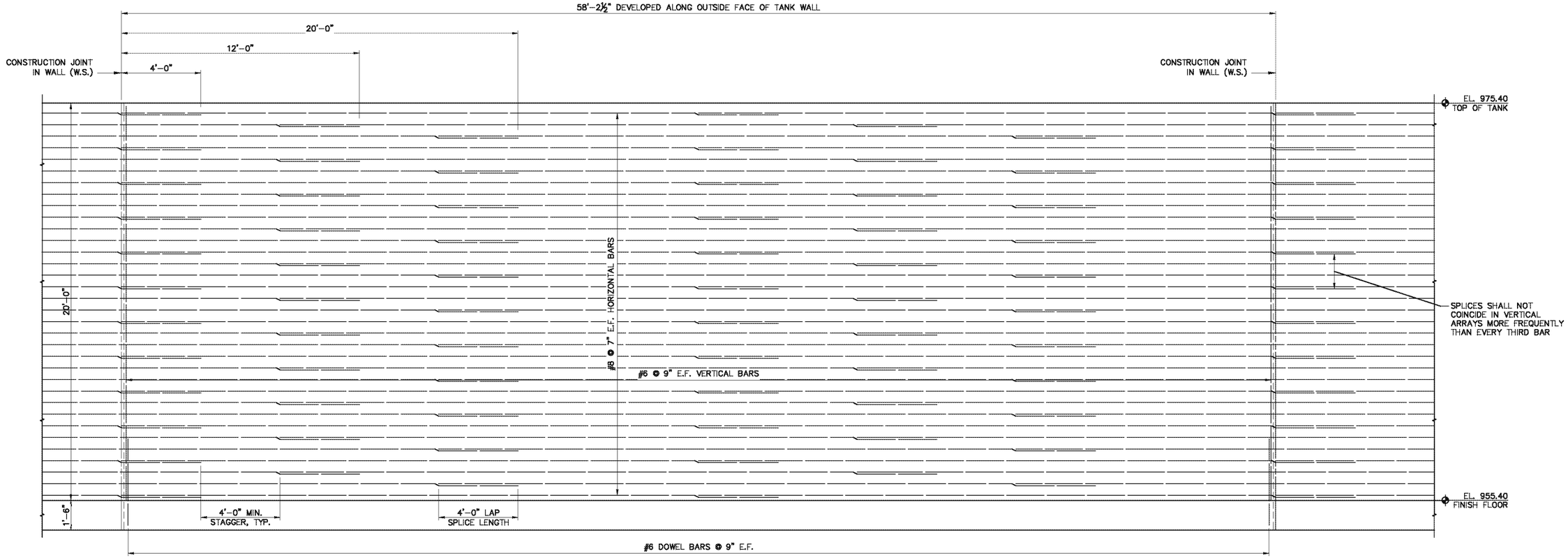
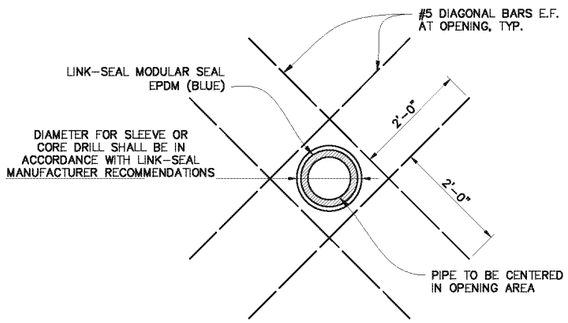


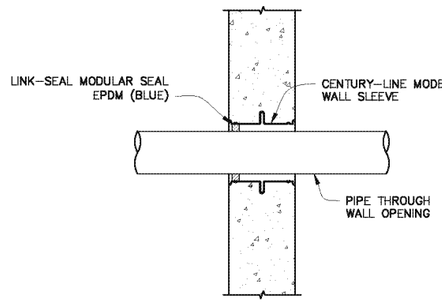
B S-1 ELEVATION B

0 1 2 3 4
Scale In Feet



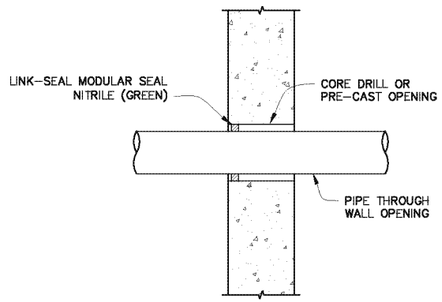
TYPICAL PIPE OPENING DETAIL

0 ½ 1 1½ 2
Scale In Feet



TYPICAL PIPE OPENING DETAIL
(WITH WALL SLEEVE)

0 ½ 1 1½ 2
Scale In Feet



TYPICAL PIPE OPENING DETAIL
(WITHOUT WALL SLEEVE)

0 ½ 1 1½ 2
Scale In Feet

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REVISED 4/25/14
REVISED 2/25/14
REVISED 2/18/14

STATE OF OHIO
BENJAMIN D. HOOTMAN
E-67464
REGISTERED
PROFESSIONAL ENGINEER

BENJAMIN D. HOOTMAN

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STRUCTURAL
TANK DETAILS

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